

WHAT IS CLAIMED IS:

1 1. A composition for facilitating delivery of a nucleic acid catalyst to
2 a biological system, said composition comprising a polyethylene glycol (PEG)-ceramide
3 conjugate, a lipid and said nucleic acid catalyst in proportions sufficient to achieve said
4 delivery of said nucleic acid catalyst to said biological system.

1 2. The composition of claim 1 further comprising phosphatidyl
2 choline.

1 3. The composition of claim 1 further comprising cholesterol.

1 4. The composition of claim 1 further comprising phosphatidyl choline
2 and cholesterol.

1 5. The composition of claims 1, 2, 3 or 4, wherein said nucleic acid
2 catalyst has an endonuclease activity.

1 6. The composition of claim 5, wherein said nucleic acid catalyst
2 comprises one or more ribonucleotides.

1 7. The composition of claim 5, wherein said nucleic acid catalyst
2 comprises one or more deoxyribonucleotides.

1 8. The composition of claim 5, wherein said nucleic acid catalyst is in
2 a hammerhead motif.

1 9. The composition of claims 1, 2, 3 or 4, wherein said lipid is a
2 cationic lipid.

1 10. The composition of claims 1, 2, 3 or 4, wherein said lipid is
2 N,N-dioleoyl-N,N-dimethylammonium chloride (DODAC).

1 11. The composition of claims 1, 2, 3 or 4, wherein said lipid is
2 1,2-dioleoyloxy-3(N,N,N-trimethylamino) propane chloride (DOTAP).

1 12. The composition of claims 1, 2, 3 or 4, wherein said
2 PEG-Ceramide conjugate comprises a fatty acid group having eight carbon atoms.

1 13. The composition of claims 1, 2, 3 or 4, wherein said
2 PEG-Ceramide conjugate comprises a fatty acid group having fourteen carbon atoms.

1 14. The composition of claims 1, 2, 3 or 4, wherein said
2 PEG-Ceramide conjugate comprises a fatty acid group having twenty carbon atoms.

1 15. The composition of claims 2 or 4, wherein said phosphatidyl
2 choline is egg yolk phosphatidyl choline.

1 16. A pharmaceutical composition comprising the composition of
2 claims 1, 2, 3 or 4 and a pharmaceutically or veterinarily acceptable carrier.

1 17. A mammalian cell comprising the composition of claims 1, 2, 3 or
2 4.

1 18. The mammalian cell of claim 17, wherein said mammalian cell is a
2 human cell.

1 19. A mammalian cell comprising the pharmaceutical composition of
2 claim 16.

1 20. The mammalian cell of claim 19, wherein said mammalian cell is a
2 human cell.

1 21. The composition of claims 1, 2, 3 or 4, wherein said nucleic acid
2 catalyst is capable of decreasing the expression of RNA associated with a mammalian
3 disease.

1 22. The composition of claim 21, wherein said mammalian disease is a
2 human disease.

1 23. The composition of claim 21, wherein said disease is cancer.

1 24. The composition of claim 21, wherein said disease is inflammation.

1 25. A pharmaceutical composition comprising the composition of claim
2 21 and a pharmaceutically or veterinarily acceptable carrier.

1 26. A method of facilitating the transfer of a nucleic acid catalyst into a
2 cell, said method comprising contacting said cell with the composition of claims 1, 2, 3
3 or 4 under conditions suitable for the transfer of said nucleic acid catalyst into said
4 biological system.

1 27. A method of treatment of a disease in a patient, said method
2 comprising administering to said patient the pharmaceutical composition of claim 25
3 under conditions in which the expression the RNA associated with said disease is
4 decreased in said patient and a therapeutic result is attained.

1 28. The method of claim 27, wherein said disease is cancer.

1 29. The method of claim 27, wherein said disease is inflammation.

1 30. The method of claim 27, wherein said administration is a systemic
2 administration.

1 31. A method of treatment of a disease in a patient comprising the step
2 of administering to said patient the composition of claim 21 under conditions in which
3 the expression the RNA associated with said disease is decreased in said patient and a
4 therapeutic result is attained.

1 32. The method of claim 31, wherein said disease is cancer.

1 33. The method of claim 31, wherein said disease is inflammation.

1 34. The method of claim 31, wherein said administration is a systemic
2 administration.

1 35. The composition of claims 1, 2, 3 or 4, wherein said nucleic acid
2 catalyst is chemically modified.

1 36. The composition of claim 5, wherein said nucleic acid catalyst
2 specifically cleaves RNA encoded by vascular endothelial growth factor receptor (VEGF-
3 R) RNA.

1 37. The composition of claim 36, wherein said nucleic acid catalyst is
2 VEGF-R-1.

1 38. The pharmaceutical composition of claim 16 further comprising
2 pharmaceutically acceptable fillers, adjuvants and diluents.

1 39. A method of cleaving a merger nucleic acid molecule in a cell, said
2 method comprising contacting said cell with the composition of claim 5 under conditions
3 suitable for the cleavage of said merger nucleic acid molecule.

1 40. The composition of claims 1, 2, 3 or 4, wherein said composition
2 is formed by the reverse phase evaporation process.

1 41. The composition of claims 1, 2, 3 or 4, wherein said composition
2 is formed by the Bligh and Dyer extraction method.

1 42. The composition of claims 1, 2, 3 or 4, wherein the concentration
2 of said lipid is between 0-30 percent.

1 43. The composition according to claim 42, wherein the concentration
2 of said lipid is between 5-30 percent.

1 44. The composition of claim 43, wherein the concentration of said
2 lipid is 15 percent.

1 45. The composition of claim 15, wherein the concentration of said egg
2 yolk phosphatidyl choline is 50 percent, the concentration of said cholesterol is 25
3 percent, the concentration of said lipid is 15 percent and the concentration of said
4 PEG-Ceramide conjugate is 10 percent.

1 46. The composition of claims 1, 2, 3 or 4, wherein said nucleic acid
2 catalyst is represented by a plasmid expression vector encoding said nucleic acid catalyst
3 in a manner that allows expression of said nucleic acid catalyst in said biological system.

1 47. The composition of claims 1, 2, 3 or 4, wherein said biological
2 system is a tumor.

1 48. The composition of claims 1, 2, 3 or 4, wherein said biological
2 system is a mammalian eye.

1 49. The composition of claims 1, 2, 3 or 4, wherein said
2 PEG-Ceramide conjugate comprises a fatty acid group having between six and twenty
3 carbon atoms.

1 50. A composition for facilitating delivery of a nucleic acid catalyst to
2 a biological system, said method comprising a polyethylene glycol (PEG)-ceramide
3 conjugate, phosphatidylcholine, cholesterol and said nucleic acid catalyst in proportions
4 sufficient to achieve said delivery of the nucleic acid catalyst to said biological system.

1 51. The composition of claim 50, wherein said nucleic acid catalyst has
2 an endonuclease activity.

1 52. The composition of claim 50, wherein said nucleic acid catalyst
2 comprises one or more ribonucleotides.

1 53. The composition of claim 50, wherein said nucleic acid catalyst
2 comprises one or more deoxyribonucleotides.

1 54. The composition of claim 50, wherein said nucleic acid catalyst is
2 in a hammerhead motif.

1 55. The composition of claim 50, wherein said PEG-Ceramide
2 conjugate comprises a fatty acid group having between six and twenty carbon atoms.

1 56. The composition of claim 55, wherein said PEG-Ceramide conjugate
2 comprises a fatty acid group having eight carbon atoms.

1 57. The composition of claim 55, wherein said PEG-Ceramide
2 conjugate comprises a fatty acid group having fourteen carbon atoms.

1 58. The composition of claim 55, wherein said PEG-Ceramide
2 conjugate comprises a fatty acid group having twenty carbon atoms.

1 59. The composition of claim 50, wherein said phosphatidyl choline is
2 egg yolk phosphatidyl choline.

1 60. A pharmaceutical composition comprising the composition of claim
2 50 and a pharmaceutically or veterinarily acceptable carrier.

1 61. A composition for facilitating the delivery of a nucleic acid catalyst
2 to a biological system, said composition comprising a non-cationic lipid, a cationic lipid,
3 a polyethyleneglycol-ceramide (PEG-Cer) conjugate and said nucleic acid catalyst in
4 proportions sufficient to achieve the delivery of said nucleic acid catalyst to said
5 biological system.

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